

# North Shore Restoration Project Draft Purpose & Need/Proposed Action

## Background

The Ranch Fire started on July 27, 2018 and burned over 410,000 acres, about 288,000 of which are on the Mendocino National Forest. Extremely dry and dense fuel conditions, low humidity, and strong winds contributed to extreme fire spread. On July 30 the fire burned 48,000 acres in one 24-hour burn period, including the majority of the project area. At its peak, the fire threatened 15,000 residences.

The fire burned with varying severity, leaving a mosaic of burn patterns on the landscape that range from unburned islands to large areas where the tree or shrub canopies were completely consumed. In the project area, 70 percent of the landscape lost 90 percent or more of the existing basal area, while only seven percent was unburned and had no basal area loss. In areas that burned at high severity, there is limited seed source remaining for natural tree regeneration. Many areas were burned by moderate to severe surface or crown fires that consumed all or most of the organic material on the forest floor.

In addition to variation in vegetation burn severity, the Ranch Fire created a mosaic of soil burn severity. In areas of moderate and high burn severity, soil effects included biological, chemical, and physical changes. Widespread loss of soil cover and loss of slope stability may result in erosion and landslides, particularly near roads. Erosion leads to loss of productivity, degraded water quality, and increased sedimentation. Although the ongoing effects will decrease each year, negative impacts to soil and water quality are expected for the next three to five years. Loss of shallow and deep roots, plus landscape-wide loss of evapotranspiration will negatively impact slope stability for at least 20-30 years.

Post fire, trees will fall for many years. Decay rates of different size classes of trees primarily determine which size trees fall first. The smaller diameter trees typically start falling the first year post fire. Wind, snow, rain and insect infestations can affect these rates. In a post fire environment, fire damage will also determine how and when trees fall. Trees that have fallen (whether naturally or by management for hazard reduction) accumulate on the ground as surface fuels. As vegetation (primarily shrubs in the first few years) begins to grow back, the combination of surface fuels and vegetation regrowth can result in excessive fuel loading, leading to higher intensity future wildfire, and adversely impacting the soil, hydrology, and vegetation response.

The Ranch Fire adversely impacted nests, dens, and other habitat structures for many terrestrial and aquatic wildlife species. Within the project area, three 100 acre Late Successional Reserves (LSR) and four northern spotted owl activity centers experienced excessive tree mortality.

More than 400 Native American archaeological sites, dating back hundreds and thousands of years, have been identified within the Ranch Fire area. Under the Burned Area Emergency Response (BAER) program, a small number have been identified for immediate treatment (stabilization or masking). However, future effects may include erosional threats, visibility and accessibility threats, and hazardous fuel loading/fire-killed tree falling threats.

Disturbances associated with wildfire suppression efforts, as well as high intensity fire itself, provide opportunities for non-native invasive plant species to invade and spread after fires. Intact native plant communities are generally resistant to invasion by non-native invasive plants, but the increased availability of sunlight, soil moisture, and physical space after wildfires provide opportunities for invasive plants to become established. These effects, coupled with the near-inevitable introduction of invasive plant propagules during fire suppression, demonstrate why the year(s) immediately after a fire are critical in the fight against non-native invasive plant species.

## Project Planning and Design

The project will be designed to avoid or minimize potential environmental impacts. The main goal is to move the project area towards desired future conditions, which provide for a resilient landscape that restores the ecological integrity and

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connectivity of habitat by promoting a mix of composition, structure, and functional processes. This will promote long-term sustainability, forest growth and productivity, continued production of ecosystem services, and resistance and resilience to stressors (e.g., climate change, fire, pathogens). The project will be consistent with National Forest Management Act, Mendocino National Forest Land and Resource Management Plan and all applicable laws, regulation, policy and direction.

### Purpose and Need for Action

The purpose of the North Shore Restoration Project includes:

- Reduce post-fire fuel loading and prevent the buildup of excessive future fuel loads.
- Reduce wildfire risk and improve resiliency to future wildfires;
- Identify opportunities to collaborate with local and state agencies to reduce wildfire risk;
- Remove fire-killed trees to provide for employee and public safety;
- Protect remaining areas of unburned vegetation and other residual legacy elements;
- Restore vegetation as appropriate for future environmental conditions and slope stability;
- Capture remaining economic value of forest products;
- Restore, enhance, and protect wildlife habitat, connectivity, and native plant communities;
- Restore recreation opportunities, including maintenance of roads and public access; and
- Support research opportunities to improve understanding of the effects of large wildfires and post-fire treatments

The proposed project is needed because the Ranch Fire resulted in severe effects to forest resources such as timber, soil, riparian areas, wildlife habitat, and heritage resources over an unusually large area. The innumerable fire-killed trees will contribute to extremely high fuel loading over time. This fuel loading will result in increased potential wildfire intensity, and jeopardize the ecosystem's ability to recover. The potential effects of increasing temperatures and altered precipitation regimes resulting from climate change may reshape ecosystem recovery processes and the provision of future composition, structure, and ecological processes in the fire area. Restoration of pre-fire plant alliances may be difficult in some parts of the burn area. Composition of future stands in drier forests in the project area may include differing combinations of conifer and hardwood species than were present before the fire; the influences of different soils, substrate moisture conditions, elevation, and exposure/aspect will influence the expected trajectories of restored stands in different parts of the burn area.

It is necessary to protect remaining areas of unburned vegetation from high intensity wildfire because those areas provide remnant wildlife habitat and seed sources for natural regeneration, and they could be lost in the next wildfire if heavy fuels accumulate in and around them. Legacy elements such as large diameter trees and large diameter woody debris may also be lost in a subsequent wildfire. Repeated wildfires could even lead to a plant community type conversion from conifer forests to shrub-dominated communities.

Because no trees survived in so much of the burned area in many locations there are very limited seed sources for natural regeneration. There is therefore a need to plant seedlings to speed up the reforestation process and re-establish forested areas at densities and compositions appropriate for this frequent-fire landscape. Additionally, the fire-killed trees will lose their ability to stabilize soil as the roots rot away, so planting trees is also critical for slope stabilization.

There is a need for timely commercial tree removal in order to capture merchantable timber value before the wood further deteriorates. Large stands of economically valued species such as Douglas-fir were killed in the Ranch Fire. Within two to three years post-fire, these trees lose economic value due to insect damage, staining due to fungal

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infections, and checking (cracks in the wood that occur as the burned wood dries). Capturing the value of burned timber enables the National Forest System (NFS) to contribute to local economies, provide wood products to society, and fund needed restoration and hazard reduction activities.

Although some wildlife species thrive in burned landscapes, many do not, including the federally threatened northern spotted owl. It is therefore necessary to protect and/or enhance the remaining areas of high-quality terrestrial wildlife habitat, as well as to restore affected habitat and connectivity between areas of suitable habitat.

One of the most serious threats to native plant communities after wildfire is non-native invasive plant species, which may colonize disturbances, frequently outcompete native species, and disrupt ecological processes sufficiently to redirect plant community development. Treating invasive plant species immediately after a fire will require far fewer resources than treatments occurring years later.

Primary recreational opportunities associated with the project area are centered on vehicle access. Consequently, there is a need to maintain and repair roads to ensure safe travel. Road maintenance is also needed for implementation of project activities.

There are still many unanswered questions concerning large wildfires, including the long-term effects of post-fire treatments. The Ranch fire is the largest wildfire in California history and has varying degrees of fire severity across extensive areas, so this is a unique research opportunity to answer questions related to salvage logging debate. It is necessary to develop a robust monitoring program now, to best capture immediate post-fire (and pre-treatment) effects as well as long-term effects of both the fire and post-fire treatments.

### Proposed Action

To meet the Purpose and Need, the Forest Service proposes a variety of actions concerned with post-fire resource management.

To reduce current and future fuel loading, reduce wildfire risk, improve resiliency to fire, and protect unburned areas and legacy components, the following treatments are proposed:

Removal of commercial and non-commercial fire-killed or fire-injured trees following the Marking Guidelines for Fire-Injured Trees in California (Smith et al. 2011) to capture economic value when possible. Project elements include tree-removal through timber sales that remove these fuels from the forest.

Fuel reduction treatments may be applied as both mechanical and hand treatment including pre-commercial and commercial thinning, mastication, cut-and-pile, and use of prescribed fire including understory burning, chaparral burning and pile burning. (Treatment may be applied as an initial treatment or following other treatments). In many cases multiple entries will be needed.

Reestablish and/or create new fuel breaks to provide strategic areas for future prescribed burning activities and suppression efforts.

To restore vegetation, especially in areas lacking sufficient seed sources, a reforestation plan will be developed. Treatments will include planting appropriate conifer and hardwood species within identified treatment units. Specific planting regimes will take into consideration topographic conditions as well as future environmental conditions. For example, lower slopes near stream channels, especially those with north and east aspects, may be capable of sustaining denser habitat in future stands, whereas drier slopes with south and west aspects will likely support fewer trees per acre and/or more hardwood species. Variable density planting and site preparation will occur where appropriate. After

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planting, manual, mechanical, and herbicide treatments will be used to thin and release planted trees. Aerial methods will not be used for herbicide treatment.

To restore and protect wildlife habitat and connectivity, treatments will incorporate protection of existing habitat structure. Design features to develop future habitat structure will endeavor to meet landscape-wide connectivity needs. The actions include developing a live-tree retention standard, a snag retention standard, a woody debris standard, and incorporating wildlife habitat needs into the reforestation planting plan to enhance connectivity within and among units wherever possible.

To protect and restore native plant communities, both forested and other types, an invasive plant management plan will be developed. As part of this plan, infestations of invasive plants will be treated with manual, mechanical, cultural, and/or herbicide treatments. Aerial methods will not be used for herbicide treatments.

To ensure safe travel and restore public access and recreation opportunities, a road maintenance plan will be developed. Prescribed thinning treatments will remove hazardous roadside trees, and an erosion control plan will address slope stability and sedimentation to protect water quality.

To promote research opportunities on the effects of large fires and post-fire management, this project proposes both current and possible future research. One such research project is being developed by the Pacific Northwest Research Station (PNW) Pacific Wildland Fire Sciences Laboratory. This project will establish a replicated-longitudinal study investigating the consequences/effects of post-wildfire salvage and will include a series of permanent research plots. This monitoring program will study the effects of large, high-severity fires and restoration treatments on future wildlife, conifer seed dispersal, tree recruitment, slope stability, soil erosion, aquatic resources, and dead and live fuel succession. It will also track long-term forest resilience and the conservation of native plant and animal species associated with the project area habitats. For this and other research projects, collaboration is planned and/or encouraged among Forest Service Research Station scientists, academic and/or nonprofit institution researchers, and students.